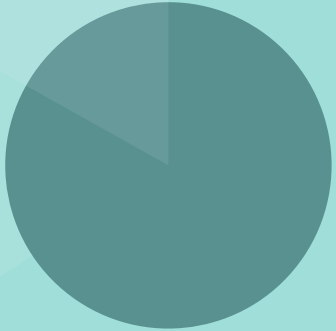
Swales In Sonoma County

By: Kyla Deocampo, Ylla Hartman, Claudia Muralles, Jeremiah Bazan

Proposing Policy

- Adopted County wide
- Added to the General Plan and Land Use Section



WHY?

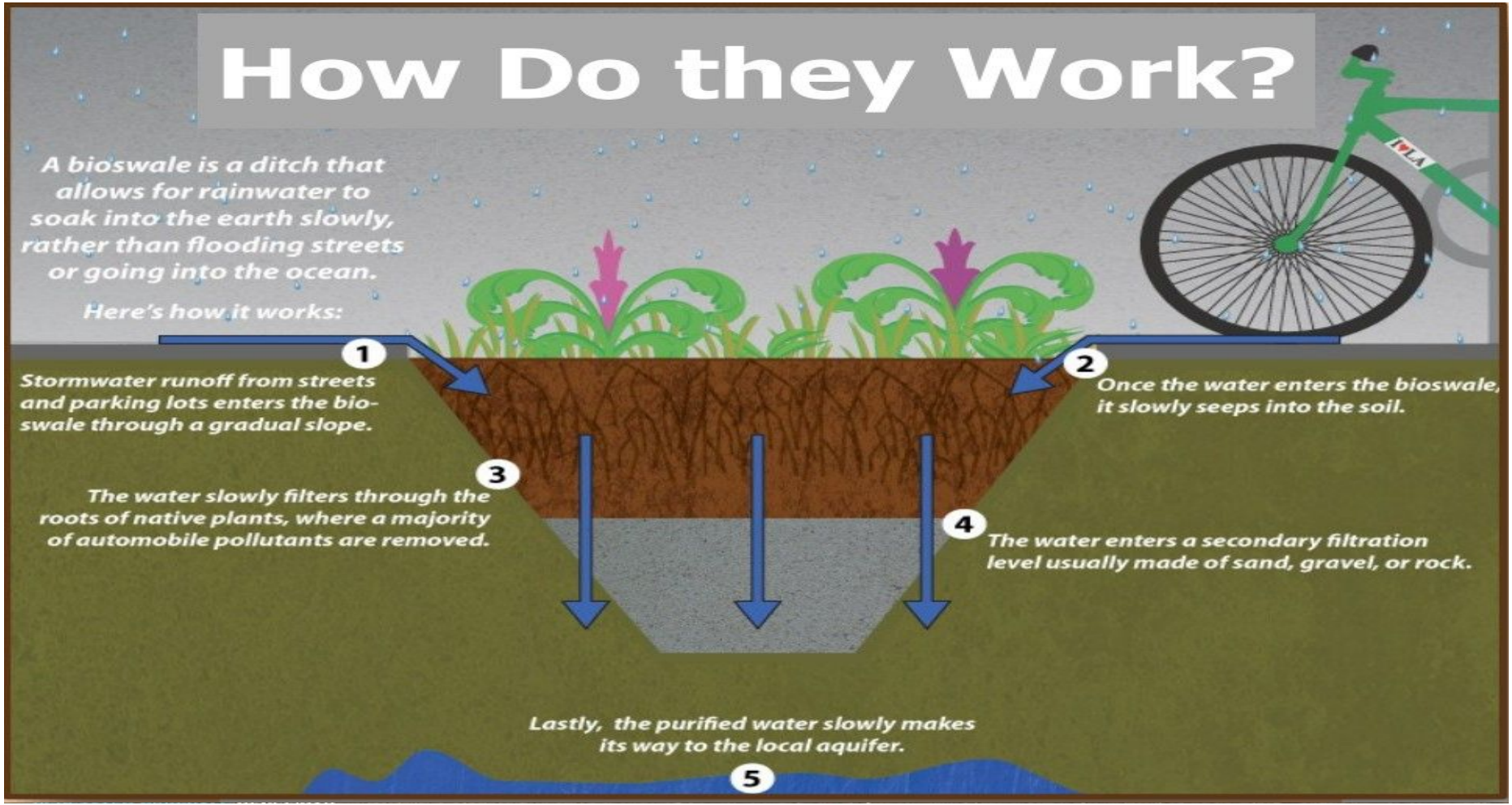
- Low start up cost
- Recharge groundwater
- Low maintenance
- Beats any other flood management program
- Sonoma County can become a leader in water conservation throughout this policy

Swales In Sonoma County

What is a Swale?

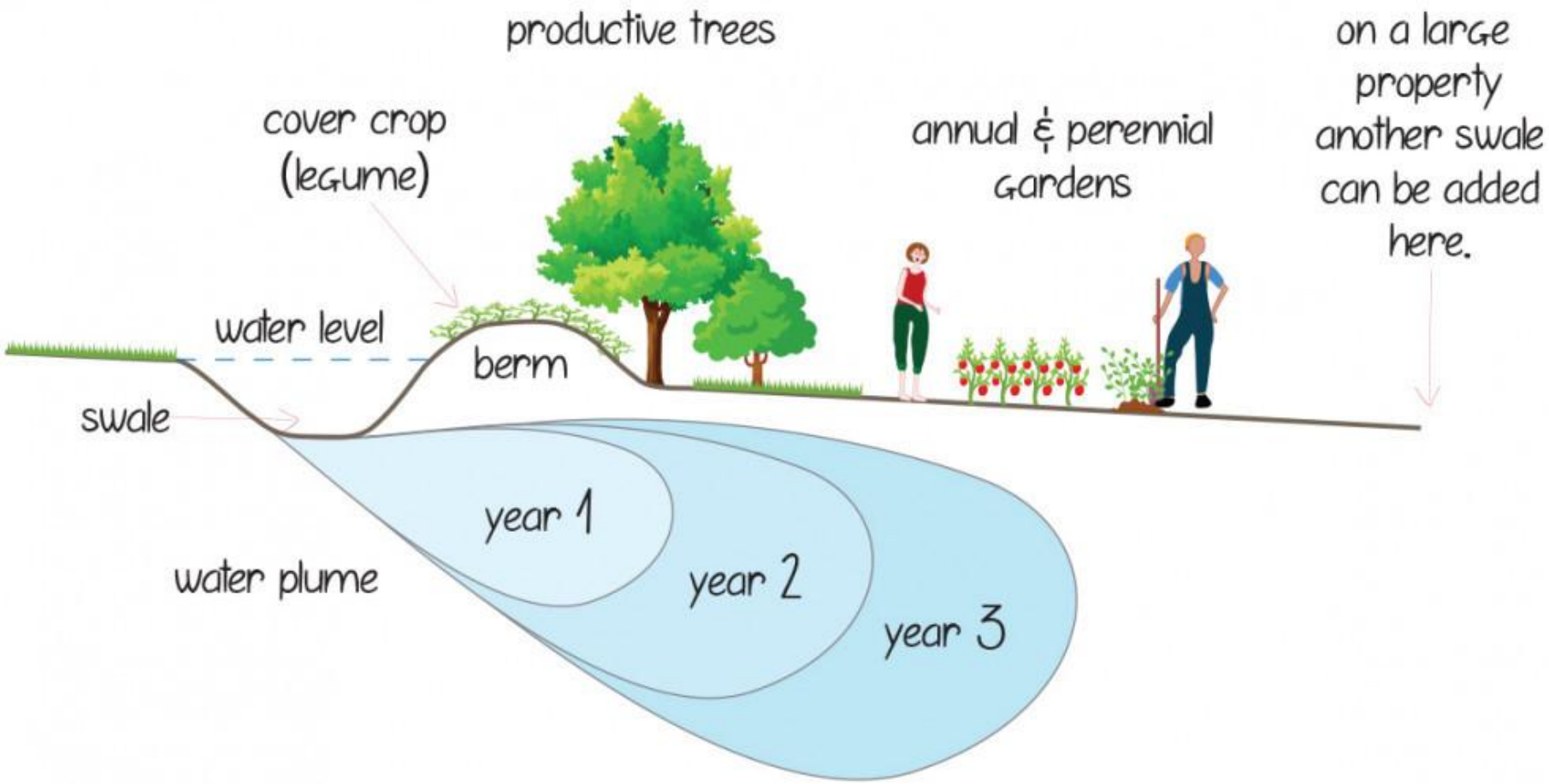
- Catch & store rain water
- Slowly refill the groundwater supply
- Water infiltrates at a right angle causing it to plume downwards as it sits and slowly soaks in, also waters nearby trees & other plants
- Water absorption slowly increases yearly, by storing rainfall until it reaches a maximum plume that extends all the way to groundwater storage

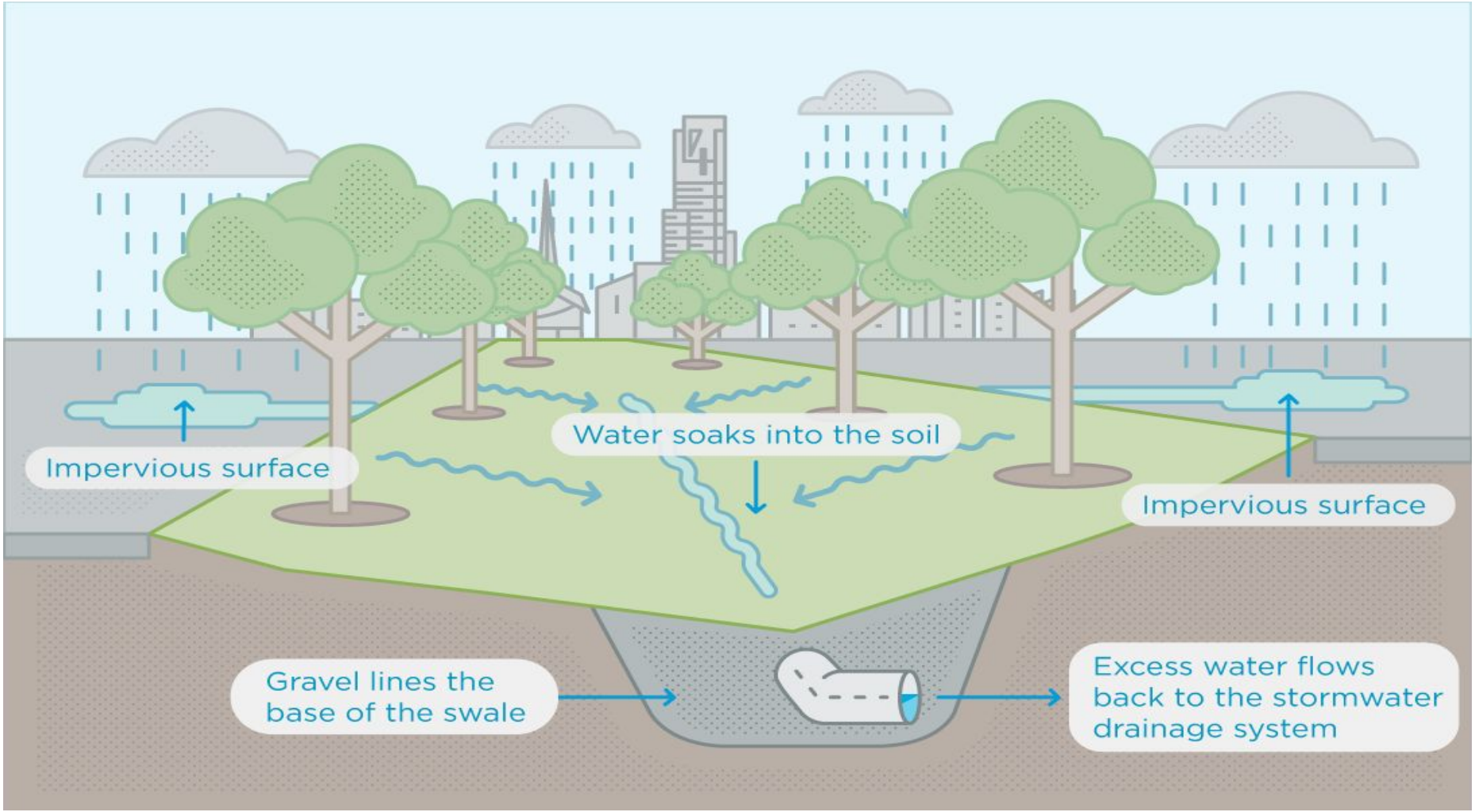
How Do they Work?



Essential Components

- Long level excavations
  - Small ridges in gardens
  - Rock piles across a slope
  - Excavated hollows in flats lands and low slopes
- Trees with deep roots
- Slope and mound
- Native plants are best
- Work in any climate
- Size of property
  - Size of swale


productive trees
cover crop
(legume)
annual & perennial
gardens
on a large
property
another swale
can be added
here.
water level
berm
swale
year 1
year 2
year 3
water plume


Impervious surface
Water soaks into the soil
Impervious surface
Gravel lines the base of the swale
Excess water flows back to the stormwater drainage system

How to build a swale: Step by step

- Ensure that the area to be utilized for the swale is prepped
- To make sure that all basic requirements are met to achieve the task of handling specific runoff amounts at a given site
  - -Ensure that the proper depths are reached
  - -Calculate average urban stormwater loads
  - - The sub watershed drainage area and impervious cover, stormwater runoff pollutant concentrations, and annual precipitation
- Understanding pollution loads allows us to ensure that the groundwater table is not contaminated.
- Flora and Fauna - Habitat
- Maintenance - 5/10 year plan

Sonoma County Soil Types

- Loamy soils: Soft & crumbly when dry but sticky and moldable when wet due to its higher clay content causing this soil type to have impressive water retention

Why Swales?

- Flood Zone Protection/Control
- Water filtration
- Groundwater recharge

Incorporate Swales;

- High Risk Flood Zones
- Future Water Supply Projects (1.4.3)
- Water supply reliability and Drought Risk Assessment
- Sustainable Groundwater Management Act (SGMA)

The Barlow (Sebastopol) **February 2018 Flood** Guerneville

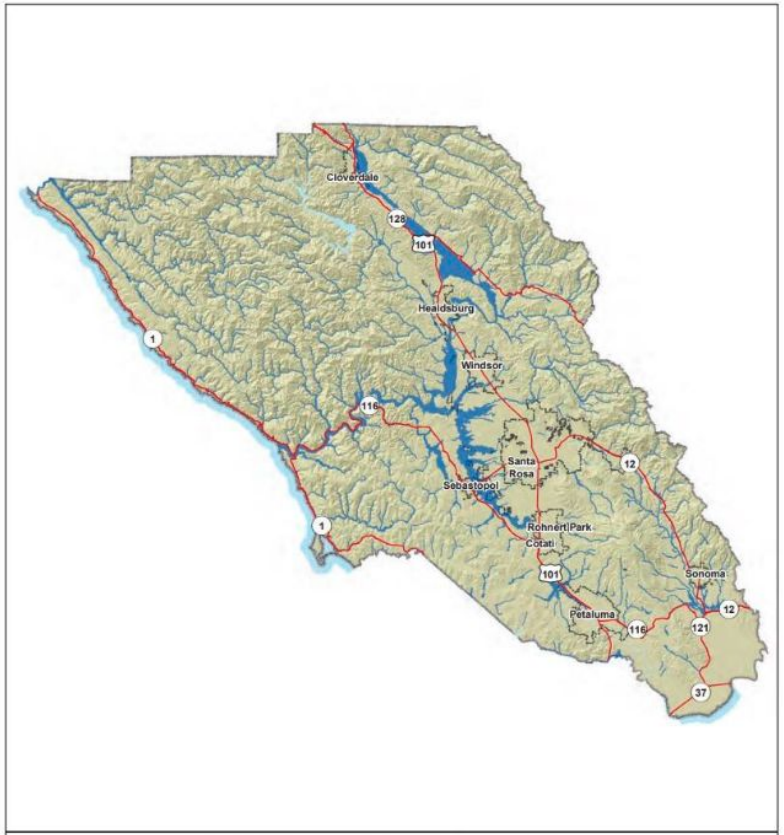


Figure 10-3. Sonoma County Flood Awareness Areas

Flood Awareness Areas
Cities
County Boundary
Highways

N
0 5 10 Miles
Data Sources: Sonoma Co.

FLOOD RISK OVERVIEW

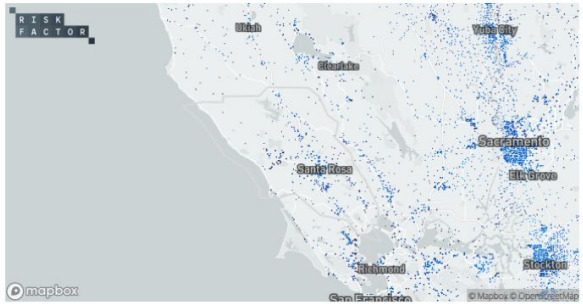
Does Sonoma County have risk?

Moderate

FLOOD FACTOR™

There are **38,640** properties in **Sonoma County** that have greater than a **26%** chance of being severely affected by flooding over the next 30 years. This represents **30%** of all properties in Sonoma County.

In addition to damage on properties, flooding can also cut off access to utilities, emergency services, transportation, and may impact the overall economic well-being of an area. Overall, **Sonoma County** has a **moderate risk of flooding** over the next 30 years, which means flooding is likely to impact day-to-day life within the community. This is based on the level of risk the properties face rather than the proportion of properties with risk.



Sonoma County Flood Risk

Residential **Major Risk**
43,901 out of **145,989** homes

Road **Severe Risk**
2,216 out of **6,721** miles of roads

Commercial **Major Risk**
3,525 out of **6,950** commercial properties

Critical Infrastructure **Moderate Risk**
61 out of **163** infrastructure facilities

Social Facilities **Moderate Risk**
233 out of **586** social facilities

Minor Moderate Major Severe Extreme

WHERE?

- Laguna de Santa Rosa
- Petaluma River
- Russian River
- Sonoma creek(s)

Solution

- Long Term Benefits
  - Swale efficiency increases every year
  - Refill ground water

- Solution: Incorporating Swales will allow Sonoma County to become more water efficient in a sustainable cost effective way, benefitting the future of the counties groundwater supply.

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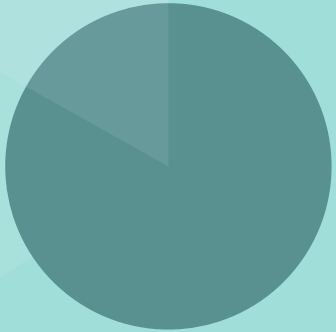

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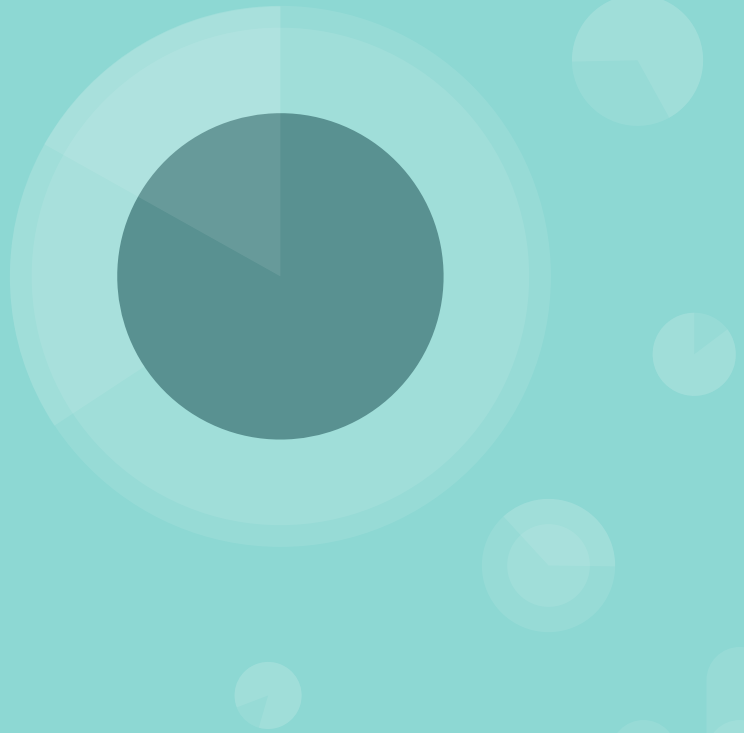
- County better outcome implementation

Thank you!
Questions?